

# Livestock grazing effects on sage-grouse

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A greater sage-grouse in Wyoming. Credit: Bureau of Land Management, BLM. Public domain

Effects of livestock grazing on greater sage-grouse populations can be positive or negative depending on the amount of grazing and when grazing occurs, according to research published today in *Ecological Applications*. The research was conducted by scientists from the United

States Geological Survey, Colorado State University and Utah State University.

Higher levels of grazing occurring early in the growing season - that is, before peak plant productivity—was associated with declining [sage-grouse](#) population trends, whereas similar levels of grazing that occurred later in the growing season corresponded with sage-grouse population increases. The study authors noted that this finding might reflect the sensitivity of some grass species to being grazed upon during their spring growing period, as well as the potential for additional plant growth if grazing later in the season removes dead vegetation.

"Increasing our understanding of how the amount of grazing and season of [livestock](#) use affect vegetation could help inform short-term modifications to livestock management to benefit sage-grouse populations and help sustain western ranching operations," said Cameron Aldridge, a CSU professor, USGS collaborator and study coauthor.

Studies demonstrating a link between grazing and sage-grouse population trends have been lacking for this landscape species, which use vegetation consumed by livestock for food and shelter. In this new study, scientists analyzed grazing records from Bureau of Land Management allotments from 2002 to 2012 in sagebrush-dominated rangelands across Wyoming to determine the amount of grazing and when livestock graze in the plant-growth season. They then used annual counts of male sage-grouse from 743 breeding sites, known as leks, during the same period to evaluate whether livestock grazing management actions corresponded with sage-grouse population trends.

"Managing the level of grazing and the timing of that grazing to reduce or avoid impacts to grasses and forbs could positively affect sage-grouse population levels through increased food resources and nesting cover that will support reproduction and recruitment of another generation of

birds," said Adrian Monroe, a CSU research scientist and the study's lead author.

The authors also found that the effects of grazing on sage-grouse populations may depend on plant productivity. In moister sites with greater plant productivity, sage-grouse populations benefited from early season grazing at intermediate grazing levels, but not at high levels or later in the season. Grazing earlier in the growing season in these high productivity locations could allow time for [plants](#) to regrow later in the same season, thereby benefiting sage-grouse when compared with sites where grazing occurs later in the growing [season](#).

"This study breaks new ground by evaluating multiple, real-world livestock grazing operations across an entire state," said USGS ecologist and study coauthor David Pyke. "The study not only revealed the complex interactions among plant growth, when and how much livestock graze, and the resulting effect on wildlife, but most importantly, it also provides hope for a way to help sustain ranching while simultaneously sustaining wildlife populations."

This study also demonstrates the use of grazing allotment records as a potential approach for landscape-scale monitoring of sage-grouse populations and for evaluating the species' responses to environmental factors and changes in other land-uses, including [grazing](#).

**More information:** Adrian P. Monroe et al. Patterns in Greater Sage-grouse population dynamics correspond with public grazing records at broad scales, *Ecological Applications* (2017). [DOI: 10.1002/eap.1512](https://doi.org/10.1002/eap.1512)

Provided by United States Geological Survey

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